Machinery Messages

Case History

Continuous monitoring saves atomizer at clay processing plant

ECC International

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The ECC International - Plant 1 is located in Sandersville, Georgia. It processes kaolin, which is mined from various clay mines in the surrounding area. Kaolin is a fine white clay used in the manufacture of paper, medicines and porcelain dishes. Part of the process involves spray drying using Niro atomizers.

ECC Plant 1 has four F75-200 atomizers and one F-350 atomizer operating 24 hours a day, every day of the year. Due to the high output speed, 11,570 rpm for the F75-200s and 8,900 rpm for the F-350, and the expense involved if a bearing failure occurs, the atomizers are monitored continuously by four Bently Nevada 9000 Monitors and one Bently Nevada 3300 Monitor. A Bently Nevada accelerometer is used on the gear case, and a probe and Proximitor® are used on the spindle shaft. Routine vibration data is collected and analyzed every two weeks with a portable data collector.

On 23 September 1992, routine vibration data was taken from one of the atomizers using a portable data collector and the levels on the monitor were checked. The monitor levels were consistent with previous checks and no new peaks were displayed on the plots. Later that evening, however, the accelerometer recorded levels above the Danger setpoints on the 9000 Monitor, and the atomizer was shut down. Attempts to restart the atomizer failed each time a load was applied. New vibration data was collected and the resulting Spectrums analyzed.

Although only five hours had passed since the earlier checks were made, this new data clearly showed high velocity levels at the ball pass frequency in the gear case bearings' outer race. The atomizer was taken out of service, disassembled and a defect was easily seen on the outer race of the bearing.

Conclusion

Had this unit not been continuously monitored, a total failure of the gear case would have occurred before the next data collection date. It would have cost $28,000 to repair this atomizer. The actual repair cost was $1,836. ■